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ABSTRACT

A view of teacher empowerment based on professional knowledge is presented in this paper. A new definition of "professional knowledge" for teachers is also proposed, based on teachers' knowledge of professional community, educational policy, and subject area. After a year of field study and a literature review of structural, formal, and institution-based efforts to empower teachers it was found that decentralization or enhanced teacher authority did not necessarily lead to teacher empowerment. Research on knowledge-based reforms was then conducted, based on interviews with 30 high school mathematics teachers involved in the Los Angeles and San Francisco projects of the Urban Mathematics Collaborative (UMC). Findings indicate that teachers believe they are empowered in principle and practice and have positive attitudes about teaching. A conclusion is that teachers' development of professionally relevant knowledge is necessary for genuine teacher empowerment. (12 references) (LMI)

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CONSORTIUM FOR POLICY RESEARCH IN EDUCATION

Teacher Empowerment and Professional Knowledge

Gary Lichtenstein
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U.S. DEPARTMENT OF EDUCATION
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September 1991

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Contents

Abstract v

Acknowledgements vii

Introduction 1

Rethinking Professional Knowledge 5

Empowerment and Three Types of Teacher Knowledge 7
- Knowledge of Professional Community. 7
- Knowledge of Education Policy 11
- Knowledge of Subject Area 12

Professional Knowledge and Empowerment 19

Endnotes 21

Abstract

This paper presents a view of teacher empowerment which includes professional knowledge as a crucial aspect. The authors also propose a new definition of "professional knowledge" for teachers, one that goes beyond staff development efforts and other commonly proposed strategies to enhance teacher knowledge.

After a year of field study and literature review of structural, formal and institution-based efforts to empower teachers, the authors found that decentralization or enhanced teacher authority did not necessarily lead to teacher empowerment. The authors then shifted their research to look at knowledge-based reforms.

Through this approach, the authors discovered teachers who believe they are empowered in principle and practice, whose attitudes about teaching are upbeat, hopeful, and even enthusiastic. These teachers believe their practice represents a model of professionalism that ought to be widely developed.

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We owe a great debt to the teachers and project administrators who participated in this study. They gave freely of their time and thoughts about teacher empowerment and strategies they believe promote it. These respondents hoped that their participation in this study would help inform policymakers about teachers' realities and the factors that empower teachers.

Colleagues from the University of California at Berkeley, Judith Warren Little and Diane Sharkan, collaborated in this research and conducted many of the interviews upon which this paper is based. Our Stanford colleagues, Nina Bascia and Carol Colbeck, provided thoughtful review and comment. None of these helpful people, of course, are responsible for its shortcomings.

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Introduction

"Teacher empowerment" became a catch-phrase in the late 1980s. At that time, policy analysts began to worry that the ambitious reforms they conceived during the decade would come to little if teachers' classroom practices were ineffective. Policymakers acknowledged that successful outcomes of more courses, longer school days, tougher graduation standards, or "back-to-basics" curricula all hinged on the attitudes and capacities of classroom teachers implementing those reforms.

Two general strategies were advanced to attack the "teacher problem." One strategy involved raising standards for individuals entering the profession. This response targeted teacher licensure, including credential-granting and preparation programs. The second strategy focused on ways to enhance the status and practices of teaching professionals. Doing so, it was reasoned, would re-shape teachers' conceptions of their own role in a way that would boost their morale, generate intrinsic and extrinsic incentives to improve their job performance, and increase professional autonomy. It was out of the debates about this latter strategy that notions of teacher empowerment emerged.

Proponents of teacher professionalization cited a back-breaking educational bureaucracy as a critical impediment to the success of reform efforts.[1] Many analysts and reformers claimed that a top-heavy educational system constrained teachers' effectiveness by reducing or eliminating their professional discretion. In this view, the bureaucratic structures of the education establishment restricted teachers' ability to operate according to their own professional notions of best practice. Recognition of these constraints quickly shifted emphasis of public education reform from devising strategies of control and oversight to designing initiatives meant to empower them.[2] Reformers and practitioners alike embraced the concept of teacher empowerment as being fundamental to an enhanced sense of professionalism and, ultimately, to better teaching.

The concept of empowerment used most commonly in policy discussions derives from the literature on organizational management and sociology of work, and connotes alteration in the distribution of power in the workplace.[3] Central to talk about empowered teachers is enhanced control over decisions that affect the school workplace generally, and the classroom in particular. Most of these conversations highlight organizational arrangements for decision-making and teachers' institutional authority. For example, Sara Lawrence Lightfoot defines empowerment in terms of the opportunities an individual has for "autonomy, responsibility, choice, and authority".[4] Or, Floretta Dukes McKenzie summarizes: "Empowering teachers most commonly appears to refer to 'allowing' classroom teachers to participate more directly in their schools' decision-making."[5]

A conclusion many have drawn from the discussions of the 1980s is that empowerment is something *given* to teachers by shifting institutional lines of authority. And, at both local and state levels, restructuring schemes or site-based management strategies that allow classroom teachers direct influence over decisions have gained popularity as a promising means to improve the quality of classroom practice.[6]

With this authority-based, institutional conception of empowerment in mind, we set about to locate settings that had initiated strategies to empower teachers by changing their roles and responsibilities. We sought to understand the consequences of these new organizational arrangements for teachers' conceptions of their jobs and classroom practices.[7] Did reputedly empowered teachers indeed relish their new authority? Did they feel better about themselves and their professional life? Did the classroom of an empowered teacher look more effective—or at least different—from that of teachers operating under traditional institutional arrangements?

Our candidate sample comprised schools and districts in California that claimed to be restructured (or restructuring), or that expressed commitment to site-based management. We also searched the literature to find examples of new institutional arrangements and empowered teachers.[8] Despite the visibility of a few districts prominent in the school restructuring movement (Dade County, Florida or Santa Fe, New Mexico, as examples), or individual schools operating in innovative and effective educational settings with teachers in charge (Central Park East in Harlem, most specifically), we found little to suggest that decentralization or enhanced teacher authority was necessarily or systematically associated with teacher empowerment, at least as conceived of by teachers themselves.

Instead, we observed and read about instances in which site-based authority resulted in little of consequence to the classroom. Contrary to feeling empowered to exercise greater authority in their teaching, many teachers found their time bound up with committees wrestling with decisions about what color to make the curtain on the auditorium stage, or whether to spend $500 dollars on a slide projector or bookcases. In some cases, we discovered that "re-structuring" mandates provided weak school administrators an excuse to delegate significant responsibilities to teachers who then floundered because of insufficient orientation, resources, support and expertise.[9] Further, we saw instances where efforts to expand teachers' authority without also attending to their capacity resulted in the ironic outcome of *diminished* performance of school, classroom or system.

In short, we were not successful in locating consistently well-developed, operating examples of "new roles and responsibilities" that made teachers feel empowered in terms of their pedagogy, practice, or their professional development. In part, this shortfall reflects the newness of these formal institutional reforms. The full effects of these structural reforms are yet to be realized. One district known nationally as a "restructuring district", for example, is still soliciting active school participation. Many schools in this district, officials readily admit, are restructured in name only. Other schools in this district that have implemented restructuring are still working out internal routines and processes. In another district, teachers entering the third year of restructuring continue to duplicate old materials orders and curricula plans because, they admit, they lack the expertise or time or support to change traditional routines. Our initial interviews, observations and literature review led us to three general conclusions:

1. It is too early to tell how the many and diverse restructuring efforts will turn out; they have yet to be fully implemented.

2. The success of structural reforms in any event depends fundamentally on the capacity of those teachers given new roles and responsibilities; even the best conceived plans turn on teachers' capability.

3. Knowledge is an elemental, irreducible aspect of teacher empowerment.

Consequently, after a year of examining structural, formal and institution-based efforts to empower teachers, we shifted our research to look at knowledge-based reforms. This approach did indeed lead us to teachers who believe they are fundamentally empowered in principle and practice, whose attitudes about teaching are upbeat and hopeful—in many cases enthusiastic—and who believe that their practice represents a model of professionalism that ought to be widely developed. In addition, we saw that knowledge carries its own authority. We met teachers working in "unreconstructed" or "non-restructured" settings who reported that they were revitalized—professionally empowered—through access to professionally relevant knowledge. Our research led us to a conception of empowerment that expands upon authority-based definitions and that implies new approaches to empowering strategies.

This chapter elaborates on this conception with the related goals of (1) presenting a view of teacher empowerment which recognizes the essential role of professional knowledge, and (2) redefining existing notions of what comprises "professional knowledge" for teachers. Our objective is not to disparage structural, or authority-based reforms as such, but to argue that changed authority or institutional relations alone likely will disappoint. Further, we aim to present a view of teachers' professional knowledge that extends beyond notions evident in staff development efforts or even in many knowledge-based empowerment strategies.

Rethinking Professional Knowledge

Expanding teachers' roles and responsibilities too often does nothing to enhance teachers' sense of power unless teachers feel capable of managing their new roles and responsibilities and have the time and support to work through the conflict that inevitably accompanies any real change. We have seen that capacity to manage expanded notions of teachers' roles and responsibilities resides in knowledge—knowledge relevant to professional practice.

Teacher knowledge includes knowledge of content and method, to be sure. But it also includes knowledge of policy systems, of professional organizations, and of a professional dialogue pertinent to teachers' work. We learned that the "knowledge" that empowers teachers is not the stuff of the weekend workshop or the after-school inservice session. The knowledge that empowers teachers to pursue their craft with confidence, enthusiasm, and authority is knowledge of the teaching profession, in the broadest possible sense.

We distilled the essential kinds of knowledge empowered teachers possessed into three overlapping areas:

- knowledge of professional community;
- knowledge of education policy; and
- knowledge of subject area.

In the remainder of this paper, we develop these aspects of teacher knowledge and their relationship to teacher empowerment. First, we briefly discuss the sample from which our conclusions were primarily drawn.

We conducted interviews with 30 members of the Los Angeles and San Francisco projects of the Urban Mathematics Collaborative (UMC). The UMC is a 10-year-old project seeded by the Ford Foundation and administered by the Educational Development Center in Boston. The UMC mission is to empower teachers by developing teacher networks that include professionals in industry and academia. The Los Angeles and San Francisco collaboratives, which have been operating since 1985, are two of 14 branches the UMC coordinates.

Each project is structured differently according to local preferences and imperatives. In Los Angeles, for example, the organization is called PLUS (Professional Links with Urban Schools) and includes 400 to 500 participants from over 52 schools across the expansive Los Angeles area. PLUS runs a number of activities and programs. We studied secondary school teachers who participated in a program designed to implement changes in school curriculum and/or pedagogy. In order to be considered for membership, the math department at a school must vote to participate, and school administrators must demonstrate support. Then, department faculty collaborate on writing a grant proposal that identifies a specific problem and approaches for solving it. PLUS staff help departments create the proposal, but it is by no means a guaranteed award. Upon the proposal's acceptance, the department is given $2,500 to help implement changes

they've proposed; more significantly, the faculty become official members of an active professional network that operates throughout the city, state, and nation. In 1990, 375 teachers representing 21 math departments participated in this facet of PLUS.

In San Francisco, 500 K-12 teachers have participated in Collaborative events in the past year. Events include workshops, speaker series, forums, and other activities. Our sample focused on high school math teachers, 50 of which could be considered active (there are approximately 180 throughout the district), in the sense that they attend more than one or two events per year. The Collaborative sponsors programs and activities that individuals participate in.

Our sample is a particular one in a number of respects. For one, it is composed of secondary school teachers. The subject matter emphasis of the Collaborative may be the most appropriate means to hook secondary school teachers, but may function differently for elementary school teachers, who tend to be more interested in pedagogical ideas. Second, California's mathematics teachers are in the midst of implementing a new state-mandated curriculum; thus, teachers' interest in examining current practice and new ideas may be artificially high. Third, the teachers we interviewed were recommended to us by the Collaborative's program director, who chose them for their consistent involvement and support of the program's goals.

Obviously, this is a biased sample, representative of only a limited population, even among Collaborative members. However, in other respects, our respondents are "typical" teachers in the varied motivations, capacities and points of view they brought to the Collaborative. This is not a sample composed entirely of "superstars" or of teachers teaching in especially supportive schools or departments. Indeed, our respondents believe firmly that their experience in the Collaborative provides the basis for constructing a generalizable model of teacher empowerment and important direction for policy. We concur.

Empowerment and Three Types of Teacher Knowledge

The "knowledge" that empowers teachers is a far-reaching knowledge of the profession as a whole. It involves much more than can be adequately described here. However, we have grouped many of the essential components of knowledge possessed by empowered teachers into three interconnected categories: (1) knowledge of professional community; (2) knowledge of education policy; and (3) knowledge of subject area. These categories are discussed below.

Knowledge of Professional Community

The isolation of the classroom teacher is a professional commonplace.[10] Breaching that isolation was tremendously important to teachers we interviewed. Each of the teachers with whom we spoke stressed the significance of the professional community they encountered through participation in the Urban Math Collaborative. Teachers from a variety of settings, and of all levels of math described new energy and confidence that they brought to their math classrooms and departments as a result of meeting other teachers and learning about the many human resources and ideas available to them. Marsha McGregory's[11] comment about attending a National Council of Teachers of Mathematics (NCTM) conference in Orlando is typical of many teachers' enthusiasm about becoming plugged into a professional network:

> ...I talked to people from Alaska, talked to people from the South, and I saw things from North Dakota. I mean, I didn't know anybody even lived in North Dakota! And there was someone there who was talking about doing these math things up in North Dakota and then they have this big presentation. I end up bringing that back to my classroom. I'm still excited about all this stuff I picked up there. (BA014)

Marsha's comment reflects the value teachers feel in participating in such a network. They see their out-of-classroom experiences as essential for building their capacity to be effective in their classrooms and schools. One of Charles Sorensens' comments reiterates the value of networking with other teachers in order to improve classroom practice:

> ...I know dozens of teachers now, across Los Angeles and Los Angeles County—in fact across the United States now.... And if I have a problem now with a particular curriculum concept, I can dial on the phone or on our computer network, and connect to 15 teachers who could help me now, outside my own school. (BA003)

Charles had been teaching for 21 years before becoming involved with PLUS. Like most teachers, he could have gone his entire career without making the professional contacts that the Math Collaborative affords.Such professional affiliation is certainly helpful to these teachers for solving immediate classroom problems; having access to such a strong resource base is empowering. Professional communities such as those of the Urban Math Collaborative give

teachers access to knowledge they desire, when they need it; they no longer are at the mercy of district inservice efforts for professional growth and stimulation.

Beyond the immediate practical value of these networks, however, teachers reconceptualize their roles and responsibilities as a result of their new affiliations. Further, they do so in ways that enhance their identification with the profession. We identified two ways that knowledge of professional community empowers teachers. First, it helps them recognize their own expertise. Second, it expands teachers' notions of what is possible within their own practice and the profession as a whole.

Knowledge of Professional Community Helps Teachers Recognize Their Expertise. Teachers' learning about their own competence bolsters their confidence in front of students and other professionals. Kirk Torrence provides a particularly striking example. An eighth-year teacher, he decided to teach geometry without the textbook, instead having students work in groups to create their own geometry. It was a daring experiment, one that daunted even him. He recalls how support from other teachers strengthened his resolve:

> I was at PLUS with people like Brad Franklin (BA002), and [others]. Every time there was an event that had anything to do with PLUS, these guys would be there telling me how great the geometry class was and what good stuff was going on.... All these guys from PLUS thought [my class] was a great idea.... For me, PLUS just said—it was the kind of place which said—"Okay, go ahead and do that. And you don't have to hide it." (BA012)

Patricia Hudson discussed how her interactions at a workshop helped her realize how knowledge she took for granted might be valuable to other teachers. Patricia had been teaching for 21 years when she attended a week-long math workshop at UCLA in 1984. She admits going only upon the insistence of her principal, who wanted to send another teacher but couldn't unless the teacher had a partner. One of the requirements of the program was to deliver a sample lesson. Much to her own horror, Patricia volunteered to go first. She had always dreaded such presentations and knew that putting it off would be agonizing. As Patricia relates the story, we get an insight into the beginning of a new-found confidence and reconceptualization of her professional role in training other teachers:

> The rest of the class went out for lunch, and I didn't because my presentation was due right after lunch, and I was getting it all set up. I was literally shaking, my hands were shaking. But I did it, and they liked it. Some members of the class convinced me to speak at the Los Angeles County Math Association, the local math organization. Their conference is in February. And that went well. Then the CMC [California Math Council] asked, and I guess, and it was all downhill from there! Now I spend half of my Saturdays working. (BAO17)

Once Patricia discovered she liked teaching teachers, she sought opportunities that expanded her professional role. Not all teachers experience as observable a shift. Harriet Rodriguez-Douglas

describes how her professional affiliation solidified her identity as a teacher relating to administrators and business professionals:

> In times past, if the superintendent were to come into this office, I would have felt really intimidated by his presence and by his authority. I'm no longer intimidated, because I grant him his experience—he has knowledge that I don't have. But I have something he doesn't have. And so I'm willing to come into dialogue and exchange with him ideas and concerns I have, knowing that I speak from a very strong base of experience and sensitivity to classroom teachers that he does not have. The Collaborative was my training ground for that. I was forced into speaking with CEOs and, I mean, all of a sudden at a dinner meeting, I was seated next to the superintendent of schools, and some vice-president from an international bank.... For the first time, I was expected to have something, you know, an idea to share. And I found I could and I found I did and I found I had experience and expertise. (LP008)

Harriet, like others we interviewed, recognized that her expertise as a teacher distinguished her among other professionals. This awareness increased her confidence both in and out of the classroom. Nancy Bruckner's example shows how knowledge of professional community can enhance a teacher's sense of efficacy by highlighting the commonalities among teachers:

> Because we began to talk [with other teachers in the district], we began to recognize that we had similar experiences. Our needs might be different in certain areas, but overall—discussing the process of how you teach something, the materials that you use, where you get your resources from—that kind of cross-pollination is very productive. You don't feel like you're low man on the totem pole. That there are others that have similar experiences and as strong as a belief in education as you have, and in that sense it does empower who you are. (BA015)

For these teachers and others, notions of empowerment include knowledge of colleagues' practice. Such knowledge creates and reinforces camaraderie by providing a web of shared experience. But knowledge of what others are doing does more than make teachers feel good. Recognizing one's own expertise can bolster one's confidence before students, colleagues and other professionals, thus enhancing self-esteem and personal efficacy beliefs.

Knowledge of Professional Community Expands Teachers' Notions of What's Possible. Recognizing one's own expertise is valuable. However, identification with a professional community provides the basis for an even more significant benefit. Interaction with other professionals—in schools, businesses, and universities—shakes up static norms of pedagogy and practice. Almost all of the teachers we interviewed related examples of how knowledge of others' practice expanded their beliefs about the possibilities within their own practice and within the profession. Discussing the results of a sabbatical teaching on a university campus, Oliver Reed, in his twenty-third year of teaching, remarks:

> ...It was this contact with UCLA which sort of changed things for me and made me part of a larger picture. Perhaps a more interesting picture, certainly more dynamic. And

made me more willing to think about, you know, changing the way I do things and so forth. (BA016)

A number of teachers discussed coming to understand "the larger picture." Paradoxically, glimpsing the larger picture made dilemmas teachers faced seem more, rather than less, manageable. Teachers who felt validated in their expertise in the eyes of their colleagues felt secure acknowledging their own limits. Gail White exclaims, "I don't know where we got the idea that we're supposed to know all the answers!" (LP007). Recognizing their expertise encourages teachers to risk practices they might not otherwise attempt. Charles explains:

[Because of the community created through PLUS] we've become less afraid to share our failures. I think most teachers want to lessen [their responsibility]. They say [when a lesson fails] "Oh, those damn kids didn't pay any attention," or "It's the kids' fault." I think that [now] we're much more willing to say, "Well, how could I restructure...how can I get them to buy into what I want them to do?" (BA003)

Teachers like Charles Sorensen, who are in touch with a professional community that validates their expertise, stand on solid enough ground to risk change. Edward Thurrow summed it up well in answering the question: What difference does it make to be in PLUS?:

Hope...it's possible to change. You can keep on moving. I don't feel stagnant. I feel that it's frustrating, but it's possible to change. (BA007)

Knowledge of others' practice re-establishes professional norms that cannot be imposed by non-practitioners. By talking with and observing others, teachers develop expectations against which they evaluate their own practice. Patricia Hudson's comments yield some insight about heightened professional norms:

...when you're with a group of people like the PLUS people, and you go to the teachers' meetings and the council meetings, and they're all out there—you're in with a lot of people who are willing to try and put themselves on the line and give this thing a shot and try something new and something different. It makes you want to do more of that. (BA017)

The safety, support and stimulation provided by the Collaborative empowers teachers to extend themselves professionally because it validates their risk-taking. Teachers become less intimidated about experimenting in the classroom and in other professional arenas, because they can gauge whether the educational choices they make will be considered sound within their respectful, tolerant, yet critical professional community. Such knowledge bolsters teachers' confidence to engage other professionals, such as district administrators, university professors, or representatives from the business community. Involvement with a professional community enables teachers to acknowledge that the knowledge, experience, and wisdom they have is specific to teaching, and not only useful, but essential, for developing meaningful reform.

Knowledge of Education Policy

Participation in the Urban Math Collaborative connects teachers to the broader policy system and makes them aware of the policy debates at district, state and national levels. Teachers attend conferences, workshops, and speaker-evenings, as well as read trade journals and the Collaborative newsletter. These policy-related activities are new to most of them. And, as a result, teachers are alert to and participate in policy discussions within their schools and elsewhere. They also report feeling less "victimized" by policymakers, and better able to plan their classroom activities. As Lorraine Evans puts it:

> That's another thing PLUS is good about. It keeps us informed about what [policy] changes are taking place [on state and national levels]. Otherwise, the normal teacher doesn't get an opportunity to know what's happening. (BA013)

Textbook selection is a major outcome of policy decisions. As a result, teachers in the Collaboratives were especially concerned about textbook selection, because it has such a great impact on their math curriculum. Concerns about textbook choices were generated by these teachers' knowledge that National Council of Teachers of Mathematics standards are being adopted nationwide. Further, teachers keep a close eye on state curriculum guidelines, which also change. Teachers want to make sure that the textbooks they will have to choose from support the newest state and national policies and represent approaches that suit their pedagogical styles. Teachers' knowledge of curriculum policy at state and national levels prompts them to become actively involved in textbook selection. Darlene Jennings describes how teachers in one district rallied:

> This year we really infiltrated the geometry textbook selection committee and exerted all the pressure we could to get PLUS teachers on the committee. And they adopted six books, which is more than they normally do, more variety. And two of them are very discovery oriented, that have never been adopted before. (BA005)

Nancy discusses how her knowledge of curriculum policy affects textbook selection at the school level and has given her new authority in conversations about instructional texts and materials:

> When the [salesman] came today with this Scott Foresman geometry book, one of the teachers asked, "Well, have you done the matrix so we can see how much of the [state] framework is already there for us so we don't have to do it ourselves...?" And he is going to get his math researcher to call us back [with the matrix information]. Those are things we've learned. We've learned to use the experts better.

Those are two examples of how teachers' knowing about imminent changes in district and state policies has prompted them to act. But teachers are keenly aware of academic and political implications of curriculum policy within their own schools and districts—teacher and student course assignment policies are the prime example. The UMC has provided teachers the

information and background to press for curriculum change within their own instructional settings. For example, Lorraine told us:

> [When we know more,] we can demand more...for instance, many of us across the district are very frustrated with the fact that they push us to put kids into algebra 1, without the prerequisite skills. And [the students] flounder, and they fail. And the failure rate is going up. And [departments across the district] are attempting different things. Well, between the different experiments going on and PLUS, I think we'll have enough data within a year or so to prove to [district administrators] that there have to be changes made in policy. (BA013)

The result of teachers' policy knowledge is empowerment—a sense of authority and a belief that they can make a difference. Charles underscores his new sense of authority based in this expertise:

> [The district's] approach has always been, "We will decide what's wrong, we will decide the solutions and then we will tell you what to do." It's always been a top-down administration.... Now there seems to be a genuine effort to listen to what's happening down here [because we are informed]. (BA003)

Knowledge of education policy empowers teachers because it provides access to the broader policy system of which they are apart. This access dispels their perceptions of teachers as "outsiders" and enables them to be proactive rather than reactive both in the classroom and in the broader policy arena. It permits them to make professional decisions based on awareness they have of curriculum issues both inside and outside the school. In this way, teachers' knowledge of curriculum policy works both up and down the system. Knowledge of curriculum policy filters down the system when teachers bring policy knowledge to bear on decisions affecting classroom practice. Curriculum knowledge works up the system when teachers bring their knowledge of classroom culture to discussions about curriculum policy at district, state, and national meetings.

Knowledge of Subject Area

It seems a truism that knowing more about a subject should make it easier to teach that subject. Yet contradictory evidence exists in anecdotes about very good scholars who have great difficulty communicating what they know to students. The experiences of teachers participating in the UMC compels us to move beyond this limited and possibly tenuous connection between knowing and teaching a subject to develop a more complex view of the relationship between subject matter knowledge and teacher empowerment. We see that breadth and depth of disciplinary knowledge empowers teachers in three ways:

- It provides the foundation of their authority and thus their professional discretion.
- It can provide a basis for involvement in a professional community.
- Disciplinary knowledge has direct relevance in policy decisions.

Strong Disciplinary Knowledge Provides a Foundation for Authority and Professional Discretion. Knowing a subject well entails knowing information about many topics in the discipline, having an awareness of connections between those topics, and demonstrating facility in the methods and ways of thinking commonly used within the discipline. For teachers, it also includes knowing different approaches to teaching these topics, connections, and ways of thinking to students. In addition, teachers need to know how the subject might be used by students after they leave school, and what current technologies are available as teaching tools. All of this knowledge becomes integrated as teachers learn their craft. This integrated picture becomes a "map" by which teachers are able to navigate their way through the maze of decisions they must make each day: what to emphasize in a particular lesson, how to help a student who is having trouble with a particular topic, what question to ask to stimulate students to further explore their developing notions, or how to stimulate the obviously bright but perhaps bored student in the back of the room. Some other decisions that subject matter knowledge guides may not be as obvious: which curricular or pedagogical trends to support and which to ignore, or which text books to select.

Teachers we interviewed shared a desire to be creative in the classroom, in order to better meet student needs. Deep and broad knowledge of mathematics was key for these teachers to effectively act on their desires. Charles' comments highlight the way in which subject matter expertise renews options for teachers and students in the classroom. After several comments revealing his love for mathematics, Charles states:

> We [Charles and his colleagues] are interested in math. We still look at interesting problems and then try to take those problems to class and share them with our students. We like to play with math, too. I've just taken the lap top computer to class and put on the IBM Tool Kit and started playing around with a function. Kids will look over and ask, "What are you doing" and they'll get involved. Pretty soon I can walk away and they are in there banging away at the computer.... I love having them [his students] give me questions I can't answer, or that we can struggle on together. I love that. (BA003)

Charles is comfortable setting up situations in which he and his students can explore mathematics spontaneously. The sense of play he speaks of arises from confidence in his mathematical facility, and results in a strong expression of this confidence—the willingness to say to students, "I don't know, let's find out together."

Marsha's integration of knowing and teaching math stems from her interest in current applications of mathematics:

> [Math] has the mistaken reputation of being ancient...[but] it's used everyday in science. I try to bring up articles that are about research on AIDS and the mathematicians involved.... I happened to tell some [Collaborative] people that I was interested in finding the real practical applications for the ellipse, hyperbola, and parabola. One of the guys copied off about fifteen pages on it and handed it to me the next Saturday. I immediately took that back to my classroom with specific problems that I could use when students ask, "When do you ever use this stuff?" (BA014)

Marsha felt a need to have a relevant and educational response to students' eternal (and justified) question, "Why do we have to learn this?" From Collaborative contacts, Marsha picked up subject matter knowledge that enabled her to provide student-ready activities demonstrating the use of math in real situations. Not only was she able to tell her students that math is useful, but she was able to show them how they could use it.

Nancy, a math department head, speaks of her department's goal to involve all students in conceptually oriented mathematics learning, in contrast to a tracked system where some students spend their high school years practicing antiquated calculation methods they've failed to master, while others are prepared for college-level math:

> Our challenge is looking at our curriculum for our freshmen and not putting kids in courses based on what they have learned in junior high. Our goal is to introduce these students to some of the ideas behind mathematics that make it interesting to us: teachers who really like mathematics. (BA015)

Harriet's comments echo this concern for opening mathematics learning to all and show how a new view of mathematics enabled her to do something about her concern:

> It wasn't until I started my experience with the Collaborative that I started evaluating what I was really trying to do in the classroom. What mathematics really is.... Now I'm convinced it's a process we're trying to teach. We're trying to create situations and experiences for the students. (LP008)

Harriet and Nancy's comments, and further discussion of the curriculum each had developed, illustrate the connection between teachers' affinity for and knowledge of mathematics, and their desire and ability to serve all students equitably. In both cases, teachers must have an integrated enough knowledge of their subject to be able to meet their students where they are, and take them where these teachers want them to go. Teachers could not do this without a sufficiently chartered map of the disciplinary terrain.

In the sophistication of the map lies the power of teachers' professional authority. A sophisticated view of what constitutes mathematical thinking allowed these teachers to weigh the value of calculation proficiency against other kinds of mathematical thinking in order to decide which is more important to their students, and when. Knowing math well enough to teach it conceptually and heuristically (as opposed to algorithmically) enabled teachers to tailor a curriculum for their students.

In and of itself, subject matter knowledge is empowering because it provides the foundation for authority essential for classroom efficacy. However, in expanding our notions of subject matter knowledge and teacher empowerment, we now turn attention to how such authority is linked to knowledge of professional community and educational policy.

Subject Matter Knowledge Provides a Basis for Collegiality. The connection between disciplinary knowledge and professional collegiality is obvious enough that we needn't dwell on

it. Nevertheless, we highlight that connection here because of the importance that sharing subject matter knowledge with colleagues had for the teachers we interviewed. Of course, the relationship is reciprocal; teachers' involvement in a professional community fosters their engagement with the discipline. Since teachers often enter the profession because of their love of a discipline, engaging in the subject at new and deeper levels is rejuvenating. Teachers feel empowered as a result of acquiring or reorganizing discipline-related knowledge.

Harriet, for example, describes how Collaborative events provided new ways of thinking about mathematics:

> Because of my involvement with the Collaborative, I became involved and met many educators of mathematics and little by little they opened my eyes to a new way of looking at mathematics. And a different way of teaching. (LP008)

Chris Chambers recalls Collaborative events where exchange of mathematics problems supported a sense of professional community:

> [In addition to the regular program], we also had a chance to talk about math, too. We math teachers can give each other problems we've heard. It's almost like at a party where the person who tells the best jokes always gets the most attention. And at a math meeting, it's the person who has the best problems that gets the most attention. (LP003)

Subject matter expertise was a special facet of professional community for Collaborative teachers precisely because the Collaboratives we studied were organized around subject matter. Affiliation in the Collaborative presumes a capacity, and thereby an authority, upon which participant bonds are built.

Disciplinary Knowledge Informs Policy Decisions. Subject matter knowledge has clear relevance to involvement in policy decisions. A number of teachers in the Math Collaboratives related variations on this theme: Learning more about mathematics provides a broad and deep view of what constitutes mathematical activity and ways of thinking. Once teachers have developed this view, their vision of what they can do with students shifts, often leading to dissatisfaction with the traditional curriculum, or, at least, ideas for how it could be enhanced. This prompts efforts to get involved with educational policy; i.e., organize new courses, fight for adoption of innovative textbooks.

Darlene's story provides an extended example of how subject matter knowledge is subtly connected to policy involvement on the school, district and state levels. Her awareness of timely and useful mathematical topics, well within the grasp of high school students, that are completely omitted from the traditional high school math curriculum led her to seek a place for these topics to be taught. Darlene tells of her first PLUS workshop, on finite mathematics, which she enrolled in to get needed credits and a little surplus cash:

> I took a bunch of papers to mark and planned on sitting there and marking papers. I really did. That was my goal, was to get a set of trig papers marked, I think, while I was

there, and sat in the back. But I really did get hooked! ...It was the first time I'd been intellectually stimulated in a long time, mathematically. You know, you tend to teach high school geometry and it gets pretty boring, at least the old, traditional way. I was really searching for some challenge. (BA005)

Among the topics covered in the finite math workshop were probability and statistics, combinatorics and network theory. Finite mathematics usually refers to a collection of topics that diverge from the traditional algebra-geometry-trigonometry-calculus sequence and that have current applications in computer science and operations research. Much of the work done on these topics is recent in terms of mathematics history; that is to say, most of the ideas were developed in the twentieth century.[12]

Darlene then talks about the difficulty of using the finite math she had learned in her classroom:

There was practically no way of fitting [finite math] into the curriculum as it existed. It's real tight; our curriculum is based on everybody talking calculus. It's not for enjoying math or for any of the millions of things you can do with math without knowing geometry and trig. (BA005)

This leads to a discussion of her hopes for state-level curricular changes that will make room for the finite math topics in which she had developed an interest. Darlene speaks about integrating the curriculum—i.e., teaching a little bit of geometry, algebra and trigonometry, along with finite math, probability and logic, in each of the high school courses grades:

The trend in California is to integrate the curriculum so that you can teach algebra and geometry and trig and all those other things at the same time at different levels. I hope it [the state framework] goes through. The math teachers in the state have been working on it for five years. (BA005)

In the meantime, Darlene created a way within her school to implement her new knowledge of finite math topics:

So anyway, what I did was, I went back and fought. I spent two years at it before it ever happened. I tried to get the district to put a finite math course in the curriculum as an option for the twelfth graders. We [her school] finally did it through a loophole. We've taken [the course entitled] Math Analysis B and...[turned it into] finite math. A lot of kids take it. (BA005)

Additionally, Darlene discussed her finite math course in light of current trends in college-level math education, where discrete math, a more complex version of finite math, is being offered as an alternative to calculus as a beginning math course. So, in addition to deepening her involvement in policy issues, Darlene's expertise in finite math made another connection for her to the broader community of mathematicians and math educators.

Darlene's story demonstrates a chain of connections between subject matter knowledge and policy involvement. Her broadened knowledge of mathematics resulted in the desire to share this new knowledge with students. When the current system made this difficult, Darlene set about changing it. Her most intense effort took place at the school level, but Darlene also spoke of her awareness of and involvement in movements for change at the district- and state-levels.

In sum, broad and deep knowledge of subject matter improves daily decision-making in the classroom; it allows teachers to convey mathematical ideas in diverse and creative ways to their students. Disciplinary knowledge informs decisions about what and how to teach to best serve student needs. In addition, disciplinary knowledge forges connections to a professional community of teachers and others who study and use mathematics, and relates to teachers' policy knowledge and involvement. Subject matter knowledge thus empowers by enhancing teachers' capacity both in and out of the classroom.

Professional Knowledge and Empowerment

The Urban Math Collaborative teachers we interviewed were empowered in the most essential sense of the word—they were genuinely inspired to perform their best because they believed they could make a difference. The Collaborative provided the setting, resources, and opportunity that enabled this to happen. Knowledge of professional community, policy, and subject area has sparked UMC teachers' examination of traditional methods and materials. Teachers participate in animated discussions in their schools, relying on their knowledge of the broader education policy arena and new ideas gained through involvement in the Collaborative's extended professional community. Teachers are also empowered in the wider policy system—they bring effective voice to policy debates at district, state and even national levels. These teachers possess an overall confidence in their own judgment, a strong belief in their ability to make intelligent and appropriate decisions in the classroom, and professional self-esteem. And it was not always so, they say.

The experience of Urban Math Collaborative teachers suggests a weakness inherent to many reform efforts that aim to empower teachers solely by increasing their participation in decision-making. Delegation of expanded roles and responsibilities predictably will disappoint if bureaucratic authority is not accompanied by professional knowledge and capacity.

We do not mean to suggest that providing opportunities for knowledge should supplant opportunities for expanded institutional authority. Ideally, enhanced professional knowledge and institutional authority will occur simultaneously. And, it may be that enhanced authority catalyzes interest in acquiring new knowledge or perspective. However, we argue that professionally relevant knowledge carries its own kind of authority that has the potential to empower teachers. Our point is that notions of empowerment evident in current decentralizing reforms misconstrue the essential spirit of empowerment when they delegate to teachers authority they may not seek or define empowerment in narrow bureaucratic terms.

We also saw that once provided opportunities for developing professionally relevant knowledge, teachers' interests emerge idiosyncratically. Some teachers with whom we spoke sought to build program continuity within their departments. Others chose to focus solely on experimenting with new pedagogical techniques. Some devoted the bulk of their energy to district or state policy discussion. Still others sought opportunities to train other professionals by leading workshops or assuming leadership roles within the Collaborative. Through acquiring knowledge of professional community, educational policy, and discipline-related knowledge, each teacher reformed his or her own notions of function and obligation according to his or her own interests and context. Effective empowerment strategies, we conclude, must afford teachers opportunities for this *situational construction* [or reconstruction] of professional role and responsibility. Again, this challenge is fundamentally knowledge-based.

This perspective on teacher empowerment shifts reformers' attention from efforts to heighten workplace control and participation as the major reform, to consideration of professionalization in

teaching through a comprehensive view of teachers' professional lives. Collaborative participants show the important ways in which the self-esteem and sense of efficacy that motivates classroom practice also extends beyond the classroom to the broader community and policy system in which teachers work. Our research has led us to realize that, as far as professionally empowered teachers are concerned, the walls of the classroom are an illusion. The meaningful focus of teacher development may include the classroom, but necessarily transcends it. We should no longer confuse where teachers work with how they work; knowledge gained outside the classroom informs (and is informed by) knowledge teachers gain within the classroom. Both sources of knowledge are essential to teacher empowerment.

As teachers extend themselves professionally, they develop a network that extends their own understanding of their role. Meeting people who are influential within their own discipline, in industry, in local, state, or national policy, enhances teachers' sense of connectedness and their beliefs that what they do has import beyond the boundaries of the classroom or school. Teachers we interviewed demonstrated that once they have this knowledge, they become active participants in the many arenas that comprise their professional domain. It has not been necessary for school, district, and state-level administrators to give authority to these teachers, so much as it has been necessary to allow them to take it, or, more precisely, share it. Allowing teachers authority in the decisions that are most relevant to their practice requires blurring boundaries between practitioners and policymakers, not simply shifting them.

A system built upon such conditions depends in large part on teachers taking initiative to pursue the kinds of knowledge we associate with professional empowerment in this paper. We found teachers eager to engage development opportunities precisely because the knowledge they stood to gain was professionally relevant. As teachers assume greater responsibility for their individual and collective growth, power relationships and traditional ways of thinking about the roles of teachers and administrators will necessarily change as well.

Empowerment does involve altered power arrangements, but it denotes power and occupational self-direction quite differently than reformers or policymakers usually consider them. Empowerment depends upon teachers' enhanced sense of efficacy and competence in the various domains of their profession, which includes the classroom, as well as policy arenas. This broader view anticipates teachers' development of professionally relevant knowledge as necessary to genuine teacher empowerment. Without such knowledge and capacity, institutional strategies dependent primarily on changes in authority and participation to empower teachers—new roles and responsibilities—may comprise an empty warrant.

Endnotes

1. See Lorraine McDonnell, *The Dilemma of Teacher Policy* (Santa Monica: The Rand Corporation, 1989) for a comprehensive analysis of the issues and tensions central to teacher policy at the state level. The new group of "Wave Two" reformers are represented by reports such as: *A Nation Prepared: Teachers for the 21st Century* (New York: Carnegie Forum on Education and the Economy, 1986); *Tommorrow's Teachers* (East Lansing, MI: The Holmes Group, 1986); *What Next? More Leverage for Teachers?* (Denver: Education Commission of the States, 1987); and *Time for Results: The Governor's 1991 Report on Education* (Washington, DC: National Governors' Association, 1987).

2. See Samuel B. Bacharach and Joseph B. Shedd. "Power and Empowerment: The Constraining Myth and Emerging Structures of Teacher Unionism in an Age of Reform" *The Politics of Reforming School Administration, The 1988 Yearbook of the Politics of Education Association*, edited by Jane Hannaway and Robert Crowson (New York: Falmer Press, 139-160).

3. For example, Rosabeth Moss Kanter, *Men and Women of the Corporation* (New York: Basic Books, 1977) provides the key elaboration of the concept of empowerment in her discussion of women in large-scale organizations. See also Richard H. Hall's discussion in Chapter 10 of *Dimensions of Work* (Beverly Hills: Sage Publications, 1986)

4. Sara Lawrence Lightfoot, "On Goodness in Schools: Themes of Empowerment," *Peabody Journal of Education* 63 (Spring 1986): 9.

5. Floretta Dukes McKenzie, "Implications and Rewards of Teacher Empowerment," in *Preparing Schools for the 1990s: An Essay Collection*, (New York: Metropolitan Life, 1989) 1-6.

6. See Richard F. Elmore and Associates, *Restructuring Schools: The Next Generation of Educational Reform* (San Francisco: Jossey Bass, 1990).

7. This research was sponsored by Center for Policy Research in Education (CPRE) as part of its "New Roles and Responsibilities" research project.

8. Choya Wilson conducted this literature review and analysis.

9. See, for example, Gene I. Maeroff, *The Empowerment of Teachers* (New York: Teachers College Press, 1988); Sharon C. Conley and Samuel B. Bacharach, "From School-site Management to Participatory School-site Management," *Phi Delta Kappan* 71 (March 1990):539-544; William H. Clune and Paula A. White, *School-based Management* (New Brunswick, NJ: Rutgers University, Center for Policy Research in Education, 1988);

Jane L. David, "Restructuring in Progress: Lessons from Pioneering Districts," in Richard F. Elmore and Associates, *Restructuring Schools*.

10. Philip Jackson's *Life in Classrooms* (New York: Holt Rinehart, 1968) and Dan Lortie's *Schoolteacher* (Chicago: University of Chicago Press, 1975) are the classic statements of teachers' isolation and lack of community among teachers.

11. "Marsha McGregory" is a pseudonym, as are all of the individual and school names that follow. The notations in parentheses following quotations or respondents (e.g. BA012) identify respondent transcripts from which comments were drawn.

12. See A. Ralston, "The Really New College Mathematics," in *The Secondary School Mathematics Curriculum*, edited by C. Hirsch and M. Zweng (Reston, VA: National Council of Teachers of Mathematics).